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Abstract of the Disclosure

A method of analyzing structural characteristics of sidewall spacers fabricated on a wafer is disclosed. A grating bar having a plurality of grating targets is provided. A theoretical optical scatterometry spectrum is generated by subjecting the grating targets to optical scatterometry. An experimental optical scatterometry spectrum is generated by subjecting the sidewall spacers on the wafer to optical scatterometry. The structural characteristics of the sidewall spacers are equated with the structural characteristics of the grating targets when the theoretical optical scatterometry spectrum substantially matches the experimental optical scatterometry spectrum.